

Amendment
Serial No. 10/698,934
Attorney Docket No. 032044

REMARKS

Claims 1, 3, 4 and 6-10 are pending in the present application and are rejected. Claim 10 is herein amended. Applicants thank the Examiner for the courtesies extended in the telephone interview of September 6, 2006. Applicants' formal response to the comments of the Interview Summary are incorporated herein.

Applicants' Response to Claim Rejections under 35 U.S.C. §112

Claim 10 was rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention.

It is the position of the Office Action that claim 10 is vague and confusing because the claim does not recite any aspect of what is necessary "to adjust its biodegradability" other than the mere presence of components (B) and (C).

Applicants herein amend claim 10 in order to recite altering the proportions of the components "to adjust the biodegradability" of the plastic. Favorable reconsideration is respectfully requested.

Applicants' Response to the Double Patenting Rejections

Claims 1, 3, 4 and 6-10 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-9 of co-pending

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Application No. 11/051,462 in view of Kaufhold et al. '266 (U.S. Patent No. 6,559,266), Kaufhold et al. '995 (U.S. Patent No. 6,527,995) or Prissok et al. (U.S. Patent No. 5,900,439).

Claims 1, 3, 4 and 6-10 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-13 of co-pending Application No. 11/172,904 in view of Kaufhold et al. '266 (U.S. Patent No. 6,559,266), Kaufhold et al. '995 (U.S. Patent No. 6,527,995) or Prissok et al. (U.S. Patent No. 5,900,439).

It is the position of the Office Action that each of the '462 application and the '904 application discloses the manufacture of a biodegradable plastic using a carbodiimide and optionally including an ultraviolet absorber. The Office Action relies on Kaufhold '266, Kaufhold '995, or Prissok to disclose the use of a benzotriazole as an ultraviolet absorber.

For at least the reasons discussed in the section below, Applicants respectfully submit that the claimed invention shows unexpected synergistic results. Thus, Applicants respectfully submit that it would not have been obvious to combine either of the '462 application and the '904 application with any of Kaufhold '266, Kaufhold '995, and Prissok. Favorable reconsideration is respectfully requested.

Applicants' Response to Claim Rejections under 35 U.S.C. §103

Claims 1, 3, 4 and 6-10 were rejected under 35 U.S.C. §103(a) as being unpatentable over Imamura (U.S. Patent No. 5,616,657) in view of Kaufhold et al. '266 (U.S. Patent No. 6,559,266), Kaufhold et al. '995 (U.S. Patent No. 6,527,995) or Prissok et al. (U.S. Patent No. 5,900,439).

Claims 1, 3, 4 and 6-10 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ariga et al. (U.S. Patent No. 6,803,443) in view of Kaufhold et al. '266 (U.S. Patent No. 6,559,266), Kaufhold et al. '995 (U.S. Patent No. 6,527,995) or Prissok et al. (U.S. Patent No. 5,900,439).

It is the position of the Office Action that Imamura and Ariga each disclose the production of a polyester from aliphatic components. The Office Action further relies on Imamura and Ariga to teach the inclusion of ultraviolet inhibitors, including benzotriazoles and a stabilizer including carbodiimides. Ariga and Imamura each disclose a compound comprising an aliphatic polyester and one of a benzotriazole-based compound or carbodiimide. The Office Action relies on each of Kaufhold '266, Kaufhold '995, and Prissok to teach the conjunctive use of a benzotriazole-based compound and a carbodiimide.

In response, Applicants respectfully submit that the claimed invention is patentable over the cited art on the basis that it would not have been obvious to modify Imamura or Ariga by including both a benzotriazole-based compound and a carbodiimide as suggested in the Office Action. Applicants respectfully submit that the claimed invention shows unexpected results over the cited art. Specifically, the claimed invention unexpectedly results in a drastic increase in the inhibition of hydrolysis as a result of the combination of an aliphatic polyester, a benzotriazole-based compound and carbodiimide. Such an unexpected result is not disclosed or suggested in Kaufhold '266, Kaufhold '995, and Prissok, despite the fact that these references disclose the combination of a thermoplastic polyurethane (TPU) resin, carbodiimide and a benzotriazole-based compound.

With regard to the law on unexpected results, the Examiner is respectfully encouraged to review MPEP §§716.02(a)-(e). “A greater than expected result is an evidentiary factor pertinent to the legal conclusion of obviousness...of the claims at issue.” *In re Corkill*, 711 F.2d 1496, 226 USPQ 1005 (Fed. Cir. 1985). According to MPEP §716.02(a), evidence of a greater than expected result may also be shown by demonstrating an effect which is greater than the sum of each of the effects taken separately (i.e., demonstrating “synergism”). *Merck & Co. Inc. v. Biocraft Laboratories Inc.*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), *cert. denied*, 493 U.S. 975 (1989). Such “synergism” need not be recited in the claims. Additionally, it is noted that “[an] inventor need not understand precisely why his invention works in order to achieve an actual reduction to practice.” *Parker v. Frillette*, 462 F.2d 544, 547, 174 USPQ 321, 324 (CCPA 1972).

Kaufhold ‘266, Kaufhold ‘995 and Prissok all disclose the combination of a thermoplastic polyurethane (TPU) resin, carbodiimide and a benzotriazole-based compound. A TPU resin is usually unstable to light and suffers from yellowing. For this reason, a UV absorber such as a benzotriazole-based compound is usually added to the TPU resin. The carbodiimide compound is merely mentioned as an optional, additional additive for the inhibition of hydrolysis.

The attached experiments show that the use of a benzotriazole-based compound and carbodiimide together do not necessarily produce the synergistic effect of reducing hydrolysis. Experiments 1 and 3 refer to a combination of TPU and carbodiimide. Meanwhile, experiments 2 and 4 refer to a combination of TPU, a benzotriazole-based compound and a carbodiimide. As illustrated in Table A, the hydrolysis resistance in experiments 2 and 4 (which utilize a

benzotriazole-based compound and carbodiimide) is almost the same as the hydrolysis resistance in Experiments 1 and 3 (which utilize only carbodiimide). Please see attached Declaration under 37 C.F.R. §1.132.

On the other hand, the present specification discloses that a compound having (A) an aliphatic polyester, (B) a carbodiimide compound, and (C) a benzotriazole-based compound has a far greater hydrolysis resistance than a compound having only an aliphatic polyester and a carbodiimide. See Tables 1, 2, and 3.

Ariga and Imamura each disclose a compound comprising an aliphatic polyester and one of a benzotriazole-based compound or carbodiimide. Applicants respectfully submit that it would not have been obvious to modify Imamura or Ariga by utilizing both a benzotriazole-based compound and carbodiimide alongside the aliphatic polyester, instead of using a benzotriazole-based compound or carbodiimide alongside the aliphatic polyester. One having ordinary skill in the art would not have recognized a synergistic effect imparting the unexpected results of hydrolysis resistance as discussed in the specification, since the experiments show that use of polyurethane with both a benzotriazole-based compound and carbodiimide (as in Kaufhold '266, Kaufhold '995, and Prissok) does not provide a synergistic effect with respect to hydrolysis resistance.

Therefore, Applicants respectfully submit that the attached experiments demonstrate the unexpected synergistic results. Accordingly, the combination of components as suggested by the Examiner would not have been obvious to one having ordinary skill in the art. Therefore, Applicants respectfully submit that there is no suggestion or motivation to combine either of

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Imamura and Ariga with any of Kaufhold '266, Kaufhold '995, and Prissok. Favorable reconsideration is respectfully requested.

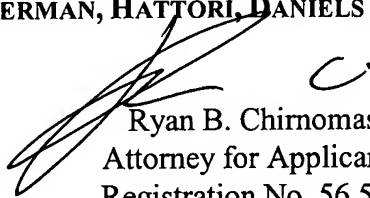
For at least the foregoing reasons, the claimed invention distinguishes over the cited art and defines patentable subject matter. Favorable reconsideration is earnestly solicited.

Should the Examiner deem that any further action by applicants would be desirable to place the application in condition for allowance, the Examiner is encouraged to telephone applicants' undersigned agent.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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RBC/jl

Enclosure: Declaration under 37 C.F.R. §1.132